Dell™ XPS™ 210 Service Manual

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

August 2006 Rev. A00

[Back to Contents Page](#)

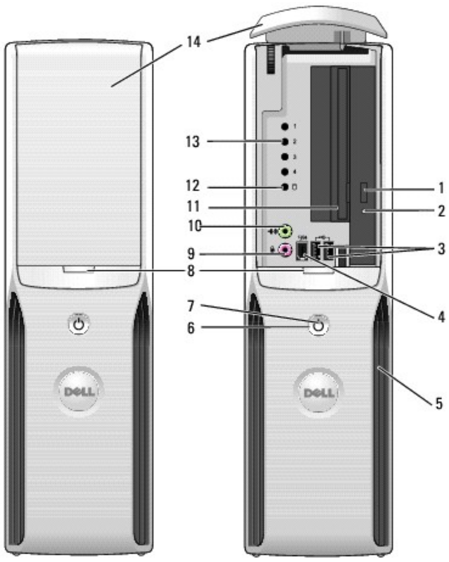
About Your Computer

Dell™ XPS™ 210 Service Manual

- Front View
- Back View

Front View

NOTE: The front panel door does not close when you are using certain Flash Media, IEEE 1394, USB, or headphone connectors.

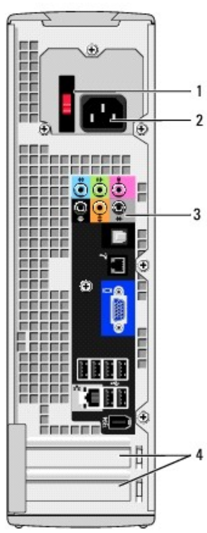


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1	CD/DVD drive eject button	Press this button to eject a CD/DVD from the drive.
2	CD/DVD drive activity light	The drive activity light is on when the computer reads data from the CD or DVD drive.
3	USB 2.0 connectors (2)	Use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras (see System Setup for more information on booting to a USB device). It is recommended that you use the back USB connectors for devices that typically remain connected, such as printers and keyboards.
4	IEEE 1394 connector	Attach high-speed serial multimedia devices, such as digital video cameras. It is recommended that you use the back IEEE 1394 connector for devices that typically remain connected, such as external hard drives and other storage devices.
5	vents	For adequate cooling, do not block any of the vents. **NOTICE:** Ensure that there is a minimum of two inches of space between all vents and any object near the vents. **NOTICE:** Do not lift or carry the computer by the vents to avoid damage to the computer. **NOTICE:** Keep the vent area clean and dust free to ensure that the computer is adequately ventilated. Use only a dry cloth to clean the vent area to avoid water damage to the computer.
6	power button	Press this button to turn on the computer.

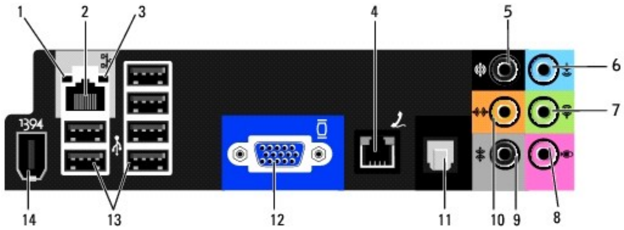
		NOTICE: To avoid losing data, do not use the power button to turn off the computer. Instead, perform an operating system shutdown.
7	power light	The power light illuminates and indicates different power states: ○ No light — The computer is turned off. ○ Steady green — The computer is in a normal operating state. ○ Blinking green — The computer is in a power-saving state. ○ Blinking or solid amber — See Power Problems in your computer *Owner's Manual*.
8	front panel door release button	Press this button to access the front panel connectors.
9	microphone connector	Use the pink microphone connector to attach a personal computer microphone for voice or musical input into a sound or telephony program. On computers with a sound card, use the microphone connector on the card.
10	headphone connector	Use the green headphone connector to attach headphones and most kinds of speakers.
11	FlexBay	Use the Flexbay for an optional floppy drive or Media Card Reader.
12	hard drive activity light	The hard drive activity light is on when the computer reads data from, or writes data to the hard drive. The light might also be on when a device such as a CD player is operating.
13	diagnostic lights	For an explanation of the diagnostic light codes, see Diagnostic Lights.
14	front panel door	This panel covers the CD/DVD drive, the Media Card Reader, and the optional floppy drive.

Back View



1	voltage selection switch (may not be available on all computers)	See the safety instructions in the *Product Information Guide* for more information.
2	power connector	Insert the power cable.
3	back panel connectors	Plug IEEE 1394, USB and other devices into the appropriate connector.
4	card slots	Access connectors for any installed PCI Express cards.

Back Panel Connectors



1	link integrity light	- Green — A good connection exists between a 10-Mbps network and the computer. - Orange — A good connection exists between a 100-Mbps network and the computer. - Off — The computer is not detecting a physical connection to the network.
2	network adapter connector	To attach your computer to a network or broadband device, connect one end of a network cable to either a network jack or your network or broadband device. Connect the other end of the network cable to the network adapter connector on the back panel of your computer. A click indicates that the network cable has been securely attached. **NOTE:** Do not plug a telephone cable into the network connector. On computers with a network connector card, use the connector on the card. It is recommended that you use Category 5 wiring and connectors for your network. If you must use Category 3 wiring, force the network speed to 10 Mbps to ensure reliable operation.
3	network activity light	Flashes a yellow light when the computer is transmitting or receiving network data. A high volume of network traffic may make this light appear to be in a steady "on" state.
4	modem connector	Use the modem connector to connect your computer to the Internet.
5	rear surround sound connector	Use the black surround sound connector to attach multichannel-capable speakers.
6	line-in connector	Use the blue line-in connector to attach a record/playback device such as a cassette player, CD player, or VCR. On computers with a sound card, use the connector on the card.
7	line-out connector	Use the green line-out connector to attach headphones and most speakers with integrated amplifiers. On computers with a sound card, use the connector on the card.
8	microphone	Use the pink connector to attach a personal computer microphone for voice or musical input into a sound or telephony program. On computers with a sound card, use the microphone connector on the card.
9	side surround sound connector	Use the grey surround sound connector to attach multichannel-capable speakers.
10	center/LFE connector	The LFE (Low Frequency Effects) Audio channel, found in digital surround sound audio schemes, carries only low frequency information of 80 Hz and below. The LFE channel drives a subwoofer to provide extremely low bass extension. Systems not using subwoofers can shunt the LFE information to the main speakers in the surround sound setup.
11	S/PDIF connector	This connector is used to transmit digital audio without going through an analog audio conversion process.
12	VGA connector	If your monitor has a VGA connector, plug it into the VGA connector on the computer.
13	USB 2.0 connectors (6)	Use the back USB connectors for devices that typically remain connected, such as printers and keyboards. It is recommended that you use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras.
14	IEEE 1394 connector	Attach high-speed serial multimedia devices, such as digital video cameras.

Back to Contents Page

[Back to Contents Page](#)

Before You Begin

Dell™ XPS™ 210 Service Manual

Getting Started

This manual provides procedures for removing and replacing the components in your computer. Unless otherwise noted, each procedure assumes that the following conditions exist:

- You have performed the steps in Turning Off Your Computer and Before Working Inside Your Computer.
- You have read the safety information in your Dell™ *Product Information Guide.*
- A component can be replaced by performing the removal procedure in reverse order.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips #0, #1, or #2 screwdriver
- Flash BIOS update program (download from **support.dell.com**)

Turning Off Your Computer

NOTICE: To avoid losing data, save and close any open files and exit any open programs before you turn off your computer.

1. Shut down the operating system:
   a. Save and close any open files, exit any open programs, click the **Start** button, and then click **Shutdown**.
   b. In the **Shut Down Windows** window, select **Shut Down**.

   The computer turns off after the operating system shutdown process finishes.

2. Ensure that the computer and any attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for 4 seconds.

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help ensure your own personal safety.

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

NOTICE: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

NOTICE: When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTICE: To avoid damaging the computer, perform the following steps before you begin working inside the computer.

1. Follow the steps in Turning Off Your Computer.

NOTICE: To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network port or device.

2. Disconnect any telephone or network cables from the computer.

3. Disconnect your computer and all attached devices from their electrical outlets, and then press the power button to ground the system board.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

4. Remove the computer cover (see Removing the Computer Cover).

NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

Back to Contents Page

Replacing the Computer Cover

Dell™ XPS™ 210 Service Manual

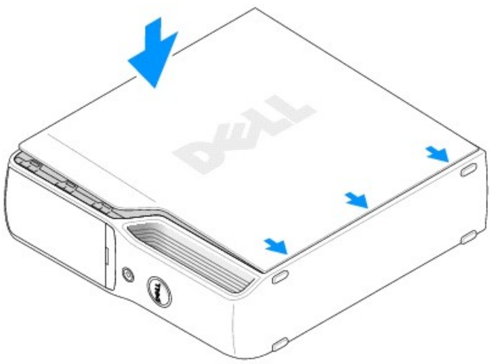
CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

1. Ensure that all cables are connected and folded out of the way.

   Gently pull the power cables toward you so that they do not get caught underneath the drives.

2. Ensure that no tools or extra parts are left inside the computer.

3. Install the cover:
   a. Align the bottom of the cover with the tabs located along the bottom of edge of the computer.
   b. Using the tabs as leverage, rotate the cover downward.



   c. Press down on the right side of the cover until it closes.
   d. Press down on the left side of the cover until it closes.
   e. Ensure that both sides of the cover are locked before moving the computer to the upright position.

NOTICE: To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

4. Connect your computer and devices to electrical outlets, and then turn them on.

[Back to Contents Page](#)

Removing the Computer Cover

Dell™ XPS™ 210 Service Manual

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

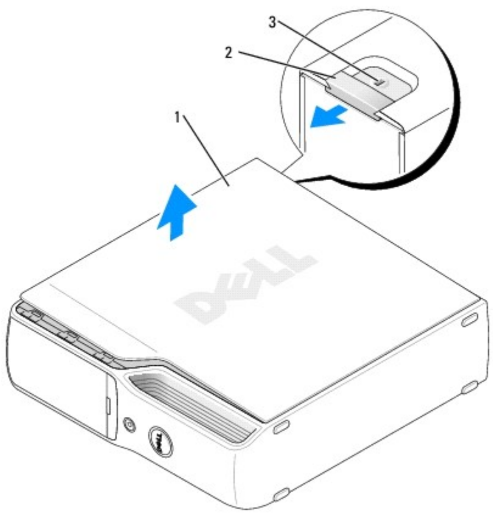
1. Follow the procedures in [Before You Begin](#).

NOTICE: Ensure that sufficient space exists to support the removed cover—at least 30 cm (1 ft) of desktop space.

NOTICE: Ensure that you are working on a level, protected surface to avoid scratching either the computer or the surface on which it is resting.

2. Lay your computer on its side with the computer cover facing up.

3. Pull back the cover release latch on the top panel.



1	computer cover	2	cover release latch	3	security cable slot

4. Locate the three hinge tabs on the bottom edge of the computer.

5. Grip the sides of the computer cover and pivot the cover up, using the bottom hinges as leverage points.

6. Lift the cover away and set it aside in a secure location.

[Back to Contents Page](#)

[Back to Contents Page](#)

Removing and Installing Parts

Dell™ XPS™ 210 Service Manual

Memory

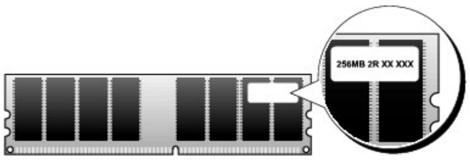
You can increase your computer memory by installing memory modules on the system board.

Your computer supports unbuffered, non-ECC, DDR2 memory.

NOTE: Buffered memory is not supported on this computer.

DDR2 Memory Overview

DDR2 memory modules should be installed in *pairs of matched memory size, speed,* and *technology*. If the DDR2 memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. See the label on the module to determine the module capacity.



NOTE: Always install DDR2 memory modules in the order indicated on the system board.

The recommended memory configurations are:

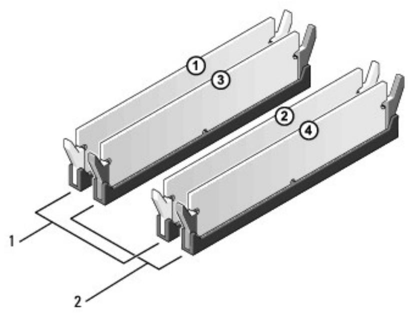
- A pair of matched memory modules installed in DIMM connectors 1 and 2 (white securing clips)

  or

- A pair of matched memory modules installed in DIMM connectors 1 and 2 and another matched pair installed in DIMM connectors 3 and 4 (black securing clips)

NOTICE: Do not install ECC memory modules.

- If you install mixed pairs of DDR2 800-MHz (PC2-6400) and DDR2 533-MHz (PC2-4300) memory, the modules function at the speed of the slowest module installed.
- Be sure to install a single memory module in DIMM connector 1, the connector closest to the processor, before you install modules in the other connectors.



1	matched pair of memory modules in DIMM connectors 1 and 2 (white securing clips)

2	matched pair of memory modules in DIMM connectors 3 and 4 (black securing clips)

NOTICE: If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. If possible, *do not* pair an original memory module with a new memory module. Otherwise, your computer may not start properly. You should install your original memory modules in pairs either in DIMM connectors 1 and 2 or DIMM connectors 3 and 4.

NOTE: Memory purchased from Dell is covered under your computer warranty.

Addressing Memory With 4-GB Configurations

Your computer supports a maximum of 4 GB of memory when you use two 2-GB DIMMs. Current operating systems, such as Microsoft® Windows® XP, can use a maximum of 4 GB of address space; however, the amount of memory available to the operating system is less than 4 GB. Certain components within the computer require address space in the 4-GB range. Any address space reserved for these components cannot be used by computer memory.

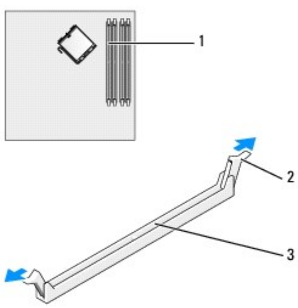
Installing Memory

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

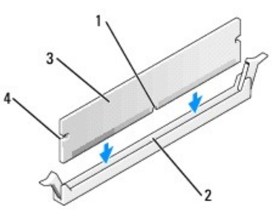
1. Follow the procedures in Before You Begin.

2. Press out the securing clip at each end of the memory module connector.



1	memory connector closest to processor	2	securing clips (2)	3	connector

3. Align the notch on the bottom of the module with the crossbar in the connector.

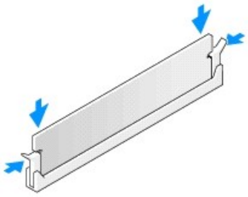


1	notch	2	crossbar	3	memory module
4	cutouts (2)				

NOTICE: To avoid damage to the memory module, press the module straight down into the connector while you apply equal force to each end of the module.

4. Insert the module into the connector until the module snaps into position.

   If you insert the module correctly, the securing clips snap into the cutouts at each end of the module.



5. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

6. Connect your computer and devices to electrical outlets, and then turn them on.

7. When a message appears stating that memory size has changed, press <F1> to continue.

8. Log on to your computer.

9. Right-click the **My Computer** icon, then click **Properties**.

10. Click the **General** tab.

11. To verify that the memory is installed correctly, check the amount of memory (RAM) listed.

Removing Memory

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Before You Begin.

2. Press out the securing clip at each end of the memory module connector.

3. Grasp the module and pull up.

   If the module is difficult to remove, ease the module back and forth to remove it from the connector.

Cards

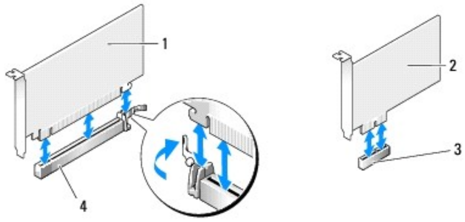
CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Your Dell™ computer provides the following slots for PCI Express cards:

- One PCI Express x16 card slot
- One PCI Express x1 card slot

NOTE: The slots for the PCI Express x16 and PCI Express x1 cards are half-height slots.



1	PCI Express x16 card	2	PCI Express x1 card	3	PCI Express x1 card slot
4	PCI Express x16 card slot				

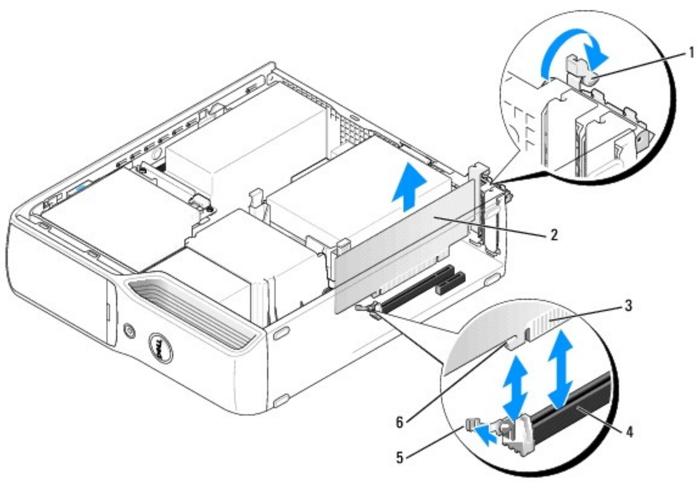
If you are installing or replacing a PCI Express card, follow the procedures in the next section. If you are removing but not replacing a card, see Removing a PCI Express Card.

If you are replacing a card, remove the current driver for the card from the operating system.

Installing a PCI Express Card

1. Follow the procedures in Before You Begin.

2. Gently push the release tab on the card retention door from the inside to pivot the door open. Because the door is attached, it will remain in the open position.



1	retention arm tab	2	PCI Express card	3	edge connector
4	card connector	5	securing tab	6	securing slot

3. If you are installing a new card, remove the filler bracket to create a card-slot opening, then continue with step 5.

4. If you are replacing a card that is already installed in the computer, grasp the card by its top corners, and ease it out of its connector.

   If necessary, disconnect any cables connected to the card.

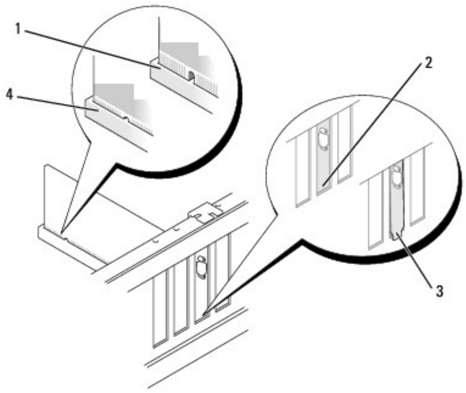
5. Prepare the card for installation.

   See the documentation that came with the card for information on configuring the card, making internal connections, or otherwise customizing it for your computer.

CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

6. If you are installing the card into the x16 card connector, position the card so the securing slot is aligned with the securing tab, and then gently pull the securing tab.

7. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.

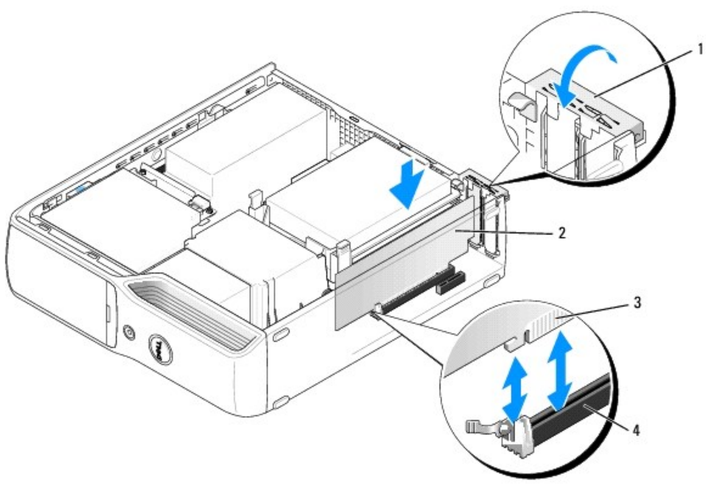


1	card not fully seated	2	bracket within slot	3	bracket caught outside of slot
4	card fully seated				

8. Before you close the card retention door, ensure that:

- The tops of all cards and filler brackets are flush with the alignment bar.
- The notch in the top of the card or filler bracket fits around the alignment guide.

9. Close the card retention door by snapping it into place to secure the cards.



1	retention arm	2	PCI Express card	3	edge connector
4	card connector				

NOTICE: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

10. Connect any cables that should be attached to the card.

    See the documentation that came with the card for information about the card cable connections.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

11. Replace the computer cover (see Replacing the Computer Cover).

12. Connect the computer and devices to electrical outlets, and then turn them on.

13. Install any drivers required for the card as described in the card documentation.

Removing a PCI Express Card

1. Follow the procedures in Before You Begin.

2. Gently push the release tab on the card retention door from the inside to pivot the door open. Because the door is attached, it will remain in the open position.

3. Gently pull back the securing tab, grasp the card by its top corners, and then ease it out of its connector.

   If necessary, disconnect any cables connected to the card.

4. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   If you need a filler bracket, contact Dell.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. Filler brackets also keep dust and dirt out of your computer.

5. Before you close the card retention door, ensure that:

   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.

6. Close the card retention door by snapping it into place to secure the cards.

7. Replace the computer cover (see Replacing the Computer Cover).

8. Connect the computer and devices to electrical outlets, and then turn them on.

9. Uninstall the driver for that card.

Hard Drive

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

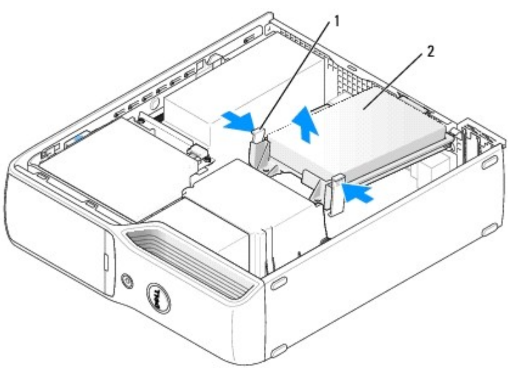
NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

NOTICE: If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.

Removing a Hard Drive

1. Follow the procedures in Before You Begin.

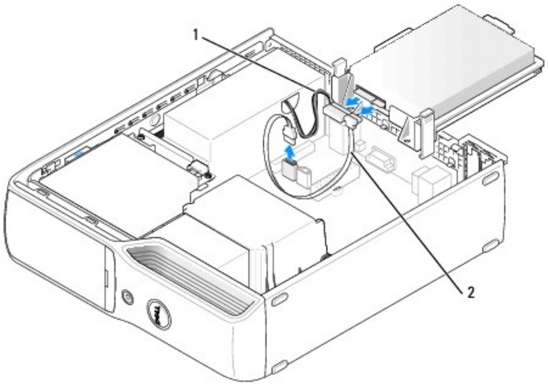
2. Press in on the blue tabs on each side of the drive, then slide the drive up and out of the computer.



1	tabs (2)	2	hard drive

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to the cables and cable connectors.

3. Lift the drive out of the computer and disconnect the power and hard-drive cables from the drive.



1	power cable	2	hard drive cable or serial ATA data cable

Installing a Hard Drive

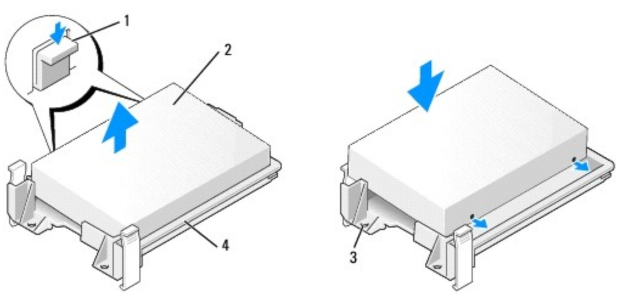
1. Follow the procedures in Before You Begin.

2. Remove the old hard drive, as needed (see Removing a Hard Drive).

3. Unpack the hard drive, and prepare it for installation.

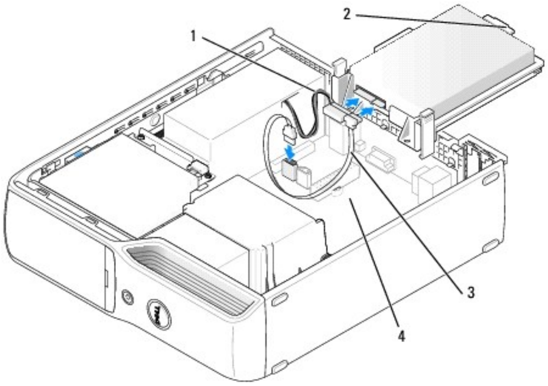
4. Check the documentation for the drive to verify that it is configured for your computer.

NOTE: If your replacement hard drive does not have the plastic guide bracket attached, remove the bracket from the old drive by unsnapping it from the drive. Snap the bracket onto the new drive.



1	tabs (2)	2	drive	3	drive screw holes
4	drive bracket				

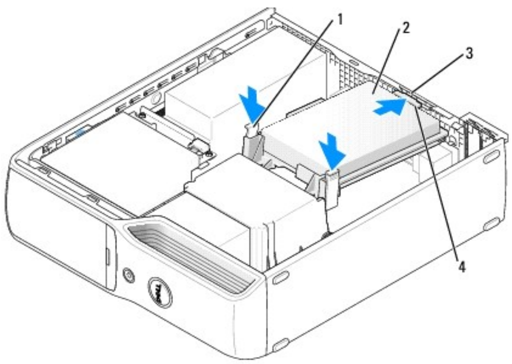
5. Connect the power cable and hard drive or SATA cable to the drive.



1	power cable	2	hard drive plastic latch	3	hard drive cable or serial ATA data cable
4	open bay				

6. Check all connectors to be certain that they are properly cabled and firmly seated.

7. Gently slide the drive into the open bay until the hard drive plastic latch attaches to the hard drive holder on the chassis.



1	tabs (2)	2	hard drive	3	hard drive holder on the chassis
4	hard drive plastic latch				

8. Align the drive screw holes with the screws projecting upwards on the heat sink holder.

9. Firmly press on the blue tab on each side of the drive until you hear a click.

10. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

11. Connect your computer and devices to electrical outlets, and then turn them on.

    See the documentation that came with the drive for instructions on installing any software required for drive operation.

CD/DVD Drive

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

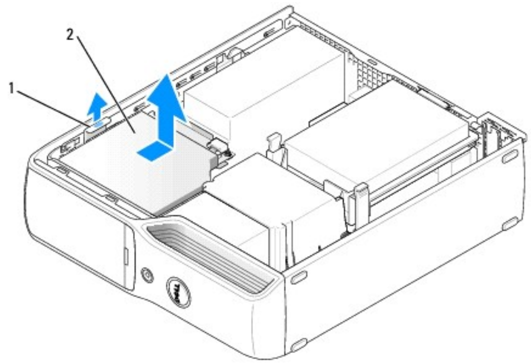
Removing a CD/DVD Drive

1. Follow the procedures in Before You Begin.

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to the cables and cable connectors.

2. Pull up on the drive release latch and slide the drive towards the back of the computer.

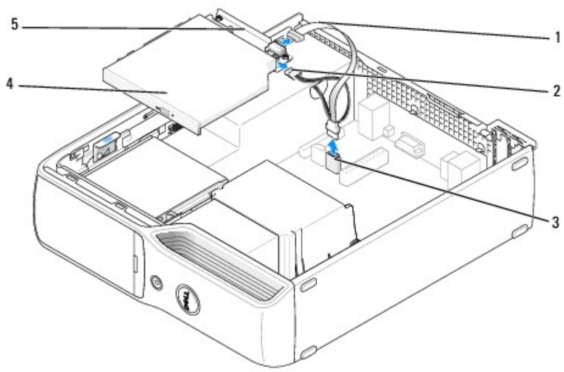
3. Carefully, lift the drive away from the computer.



1	drive release latch	2	CD/DVD drive

4. Disconnect the data cable from the CD/DVD connector on the system board (see System Board Components).

5. Disconnect the power cable and data cable from the back of the drive.



1	data cable	2	power cable	3	CD/DVD connector
4	CD/DVD drive	5	CD/DVD drive bracket		

6. Set the drive aside in a secure location.

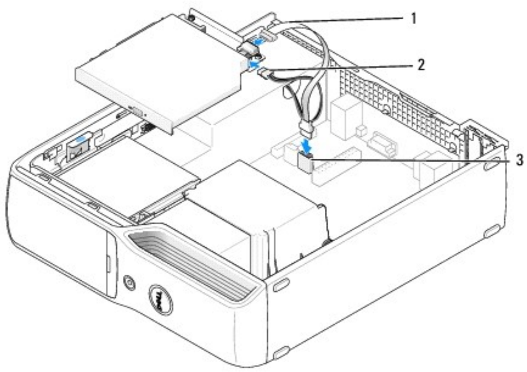
Installing a CD/DVD Drive

1. Follow the procedures in Before You Begin.

2. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer.

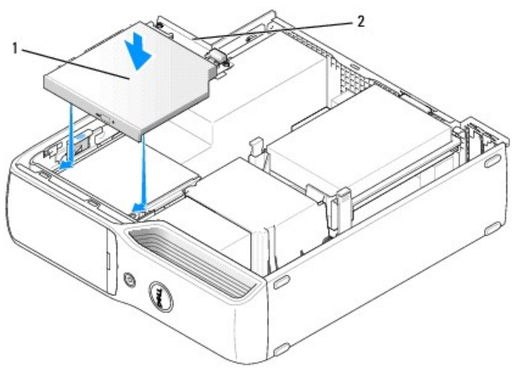
3. Connect the power and data cables to the drive.



1	data cable	2	power cable	3	CD/DVD connector

4. Connect the data cable to the CD/DVD connector on the system board.

5. Gently position the drive until it clicks into place.



1	CD/DVD drive	2	CD/DVD drive bracket

6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

7. Replace the computer cover (see Replacing the Computer Cover).

8. Connect your computer and devices to electrical outlets, and then turn them on.

9. See the documentation that came with the drive for instructions on installing any software required for drive operation.

10. Enter System Setup (see Entering System Setup), and then select the appropriate **Drive** option.

Floppy Drive (Optional)

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

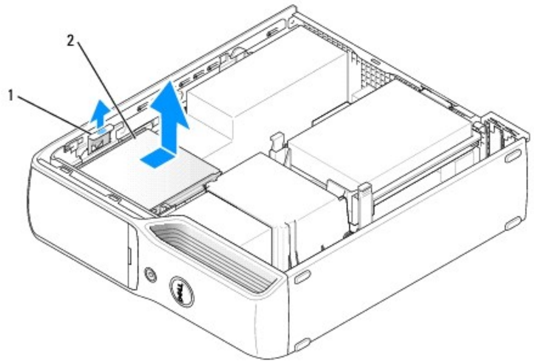
Removing a Floppy Drive

1. Follow the procedures in Before You Begin.

2. Remove the CD/DVD drive, if installed (see Removing a CD/DVD Drive).

3. Pull up on the drive release latch and slide the floppy drive towards the back of the computer.

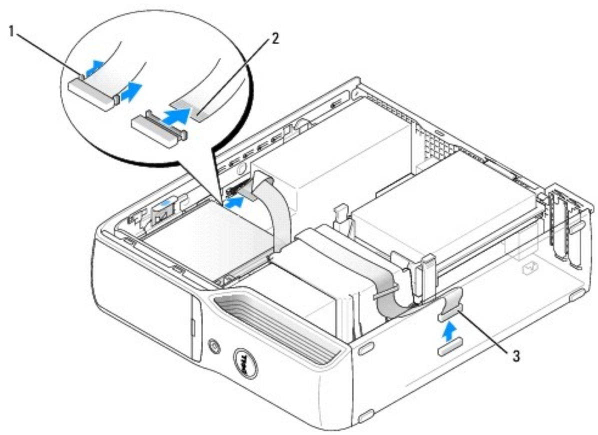
4. Carefully, lift the drive away from the computer.



1	drive release latch	2	floppy drive

5. Disconnect the floppy drive interface cable from the system board (see System Board Components).

NOTE: The interface cable is held in place by the metal drive bracket and does not need to be removed from the drive.



1	cable release tab	2	interface cable edge connector	3	interface cable

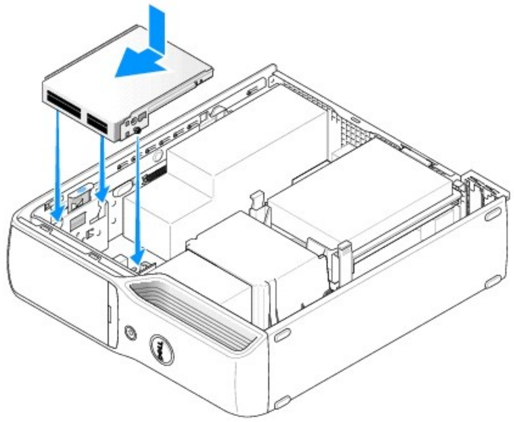
Installing a Floppy Drive

NOTE: If the replacement or new floppy drive does not have the shoulder screws, use the screws in the drive panel insert.

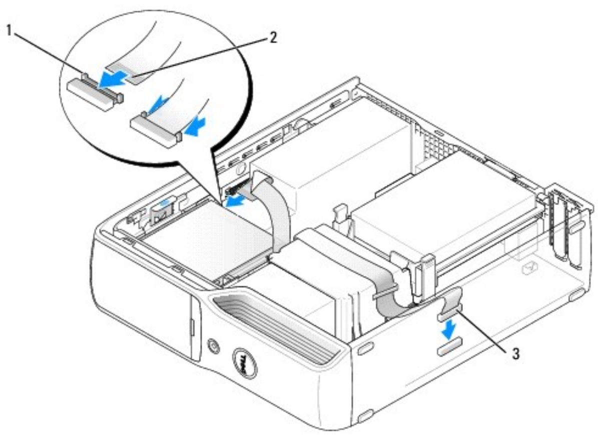
1. Follow the procedures in Before You Begin.

2. Remove the CD/DVD drive, if installed (see Removing a CD/DVD Drive).

3. Gently slide the floppy drive into place until you hear a click or feel the drive securely installed.



4. Attach the interface cable to the system board (see System Board Components).



1	cable release tab	2	interface cable edge connector	3	interface cable

5. Check all cable connections, and fold cables out of the way to avoid blocking the fan and cooling vents.

6. Replace the CD/DVD drive (see Installing a CD/DVD Drive).

7. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable in to the network port or device, and then plug it in to the computer.

8. Connect your computer and devices to electrical outlets, and then turn them on.

   See the documentation that came with the drive for instructions on installing any software required for drive operation.

9. Enter System Setup (see Entering System Setup), and then select the appropriate Drive option.

Media Card Reader

For information about using the Media Card Reader, see your *Owner's Manual*.

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

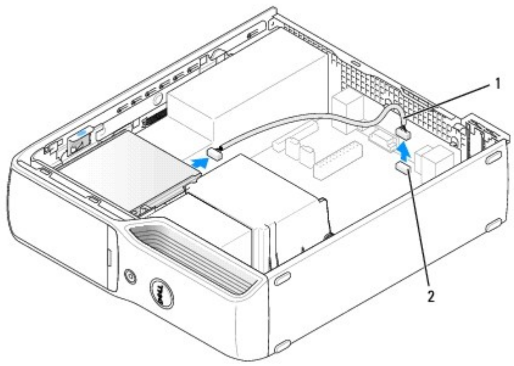
Removing a Media Card Reader

1. Follow the procedures in Before You Begin.

2. Remove the CD/DVD drive, if installed (see Removing a CD/DVD Drive).

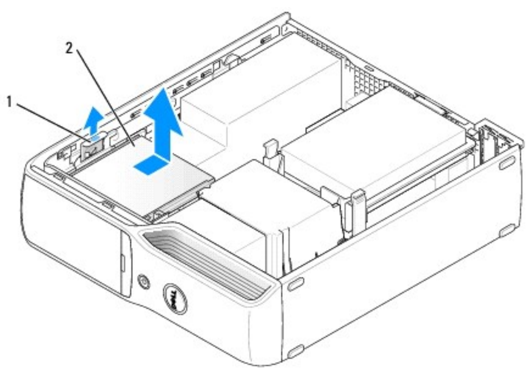
3. Remove the hard drive (see Removing a Hard Drive).

4. Disconnect the interface cable from the back of the Media Card Reader and from the Media Card Reader connector on the system board (see System Board Components).



1	interface cable	2	Media Card Reader connector

5. Pull up on the drive release latch and slide the Media Card Reader towards the back of the computer, then lift to remove the drive from the computer.



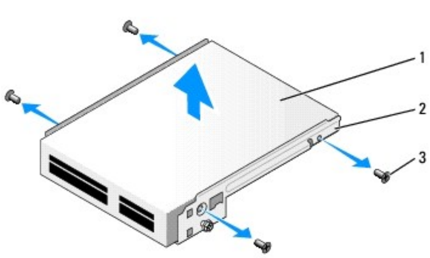
1	drive release latch	2	Media Card Reader

Installing a Media Card Reader

1. Follow the procedures in Before You Begin.

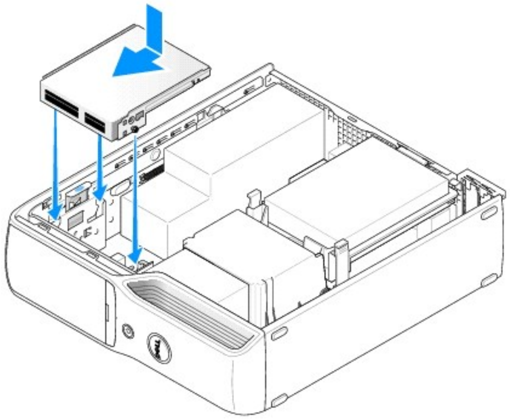
NOTE: If necessary, remove the Media Card Reader screws.

2. Remove the Media Card Reader from its packaging and ensure that all the screws are included.

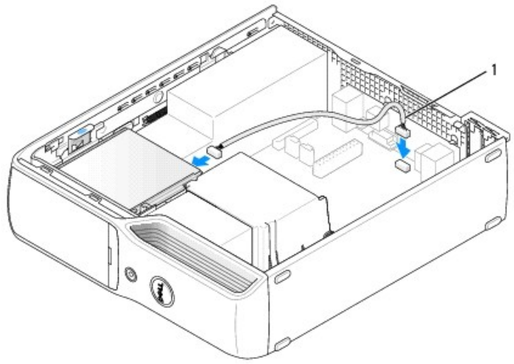


1	drive	2	drive bracket	3	screws (4)

3. Slide the drive into place until you feel a click or feel the drive securely installed.



4. Connect the interface cable to the back of the Media Card Reader and to the Media Card Reader connector on the system board (see System Board Components).



1	interface cable

5. Replace the hard drive (see Installing a Hard Drive).

6. Replace the CD/DVD drive (see Installing a CD/DVD Drive).

7. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable in to the network port or device, and then plug it in to the computer.

8. Connect your computer and devices to electrical outlets, and then turn them on.

   See the documentation that came with the Media Card Reader for instructions on installing any software required for its operation.

9. Enter system setup (see Entering System Setup) and select the appropriate Drive option.

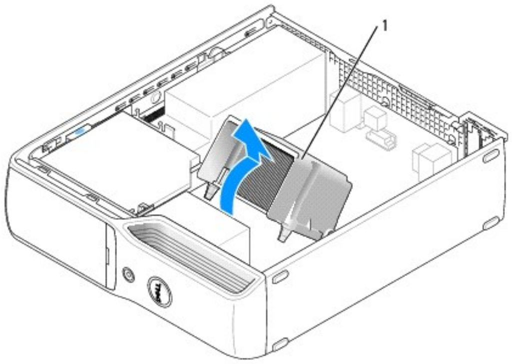
Heat Sink Assembly

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

Removing the Heat Sink Assembly

1. Follow the procedures in Before You Begin.

2. Remove the CD/DVD drive, if installed (see Removing a CD/DVD Drive).



1	heat sink assembly

CAUTION: The heat sink assembly can get very hot during normal operation. Be sure that the assembly has had sufficient time to cool before you touch it.

3. Remove the two screws from either side of the heat sink assembly.

NOTICE: After you remove the heat sink assembly, lay the assembly on its side. Do not set the heat sink assembly upright or touch the thermal interface to avoid damage to the thermal interface material on the underside.

4. Pivot the assembly towards the back of the computer and lift to remove.

Installing the Heat Sink Assembly

1. Place the heat sink assembly back onto the heat sink assembly bracket.

2. Rotate the heat sink assembly down towards the computer base and tighten the two captive screws.

NOTICE: Ensure that the heat sink is correctly seated and secure.

3. Replace the CD/DVD drive (see Installing a CD/DVD Drive).

4. Replace the computer cover (see Replacing the Computer Cover).

Fan Assembly

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

Removing the Fan Assembly

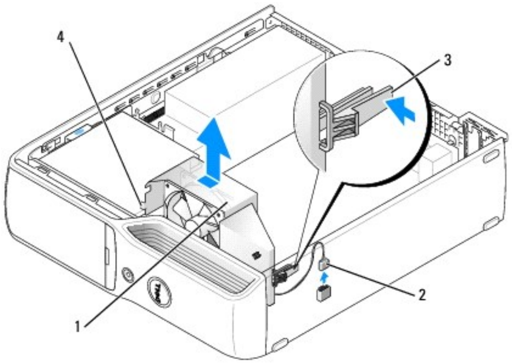
1. Follow the procedures in Before You Begin.

2. Remove the CD/DVD drive, if installed (see Removing a CD/DVD Drive).

CAUTION: The heat sink assembly can get very hot during normal operation. Be sure that the assembly has had sufficient time to cool before you touch it.

3. Remove the heat sink assembly (see Removing the Heat Sink Assembly).

4. Disconnect the fan power cable from the CPUFAN connector on the system board (see System Board Components).



1	fan assembly	2	fan cable connector	3	fan release lever
4	fan tabs (2)				

5. Press the fan release lever, then slide the fan towards the back of the computer to release the two fan tabs from the keyhole slots in the chassis.

6. Carefully, remove the fan from the computer.

Installing the Fan Assembly

When reinstalling the fan, ensure that you do not pinch any wires that run near the fan.

NOTICE: Ensure that the two fan tabs are fully inserted into the keyhole slots in the chassis so that the fan can slide back fully into position. Ensure that the fan release lever is seated into its slot in the chassis.

Follow the procedures in Removing the Fan Assembly in reverse order.

Processor

Removing the Processor

CAUTION: Do not perform the following steps unless you are familiar with hardware removal and replacement. Performing these steps incorrectly could damage your system board. For technical assistance, see "Contacting Dell" in your *Owner's Manual*.

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

1. Follow the procedures in Before You Begin.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

CAUTION: The heat sink assembly can get very hot during normal operation. Be sure that the assembly has had sufficient time to cool before you touch it.

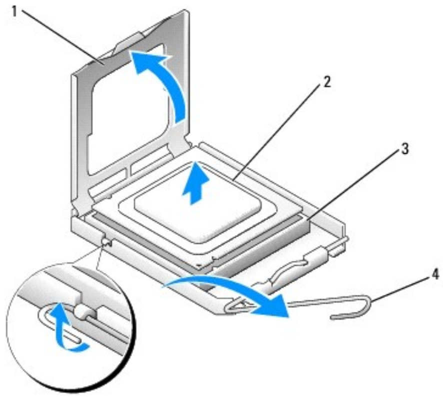
NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

2. Remove the hard drive (see Removing a Hard Drive).

NOTICE: If you are installing a processor upgrade kit from Dell, discard the original heat sink. If you are not installing a processor upgrade kit from Dell, reuse the original heat sink when you install your new processor.

3. Remove the heat sink assembly (see Removing the Heat Sink Assembly).

4. Place your finger upon the hook end of the release lever, then push down and out to release it from the tab that secures it.



1	processor cover	2	processor	3	processor socket
4	release lever				

5. Open the processor cover, and then carefully remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

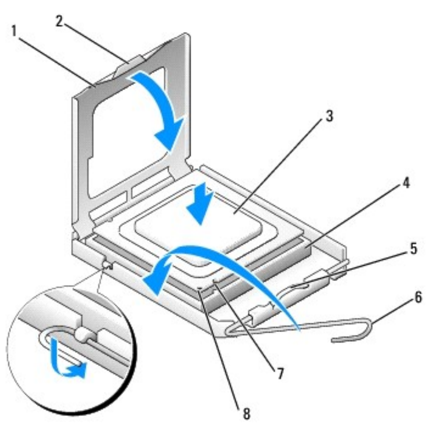
1. Unpack the new processor, being careful not to touch the underside of the processor.

NOTICE: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer. Ensure that the notches on the processor are aligned with the notches on the socket.

2. If the release lever on the socket is not fully extended, move it to that position.

3. Orient the front and rear alignment notches on the processor with the front and rear alignment notches on the socket.

4. Align the pin-1 corners of the processor and socket.



1	processor cover	2	securing tab	3	processor
4	processor socket	5	center cover latch	6	release lever
7	alignment notches (2)	8	socket and processor pin-1 indicator		

NOTICE: Socket pins are delicate. To avoid damage, ensure that the processor is aligned properly with the socket, and do not use excessive force when you install the processor.

5. Gently place the processor in the socket and check to ensure that the processor is positioned correctly.

6. When the processor is fully seated in the socket, close the processor cover.

   Ensure that the securing tab on the processor cover is positioned underneath the center cover latch on the socket.

7. Pivot the socket release lever back toward the socket and snap it into place beneath the securing tab.

NOTICE: When you install the heat sink assembly, do not touch the thermal interface to prevent damage to the thermal interface material on the interface.

NOTICE: If you are *not* installing a processor upgrade kit from Dell, reuse the original heat sink assembly when you replace the processor. If you installed a processor replacement kit from Dell, return the original heat sink assembly and processor to Dell in the same package in which your replacement kit was received.

8. Replace the heat sink assembly (see Installing the Heat Sink Assembly).

9. Replace the hard drive (see Installing a Hard Drive).

10. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

11. Connect your computer and devices to electrical outlets, and then turn them on.

Modem

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTICE: Before you remove or install the modem, make sure to disconnect all telephone and network cables from your computer.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Replacing the Modem

1. Follow the procedures in Before You Begin.

2. Remove the hard drive (see Removing a Hard Drive).

NOTE: For easier access to the modem, it may be necessary to remove the power cable from the power connector (POWER) on the system board (see System Board Components).

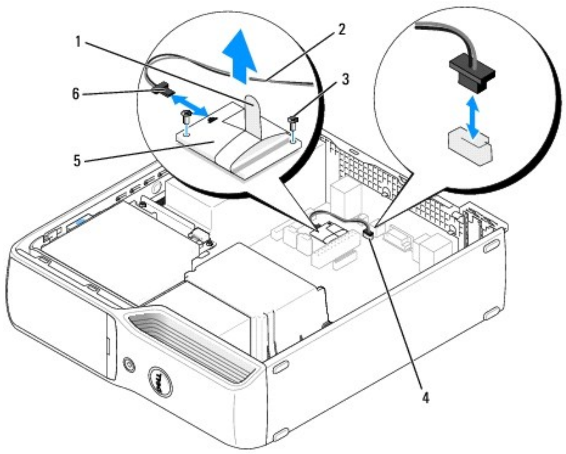
3. Remove the existing modem:

   a. Remove the modem cable from the RJ11 internal connector.

   b. Use a small Phillips screwdriver to remove the two screws securing the modem to the system board, and then set the screws aside.

   c. Pull straight up on the attached pull-tab to lift the modem out of its connector on the system board.

   d. Remove the modem cable from the modem.



1	pull tab	2	modem cable	3	screws (2)
4	RJ11 internal connector (RJ11INT)	5	modem	6	T-shaped connector attached to the modem cable

4. Install the new modem:
   a. Connect the T-shaped connector of the modem cable to the modem.
   b. Align the modem with the screw holes and press the modem into its connector on the system board (see System Board Components).

NOTICE: The connectors are keyed to ensure correct insertion. If you feel resistance, check the connectors for proper orientation, then try again.

   c. Replace and tighten the two screws to secure the modem to the system board.
   d. Replace the other end of the modem cable to the RJ11 internal connector.

5. Connect the power cable to the power connector (POWER) on the system board (see System Board Components).

6. Replace the hard drive (see Installing a Hard Drive).

7. Replace the computer cover (see Replacing the Computer Cover).

Power Supply

Removing the Power Supply

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

1. Follow the procedures in Before You Begin.

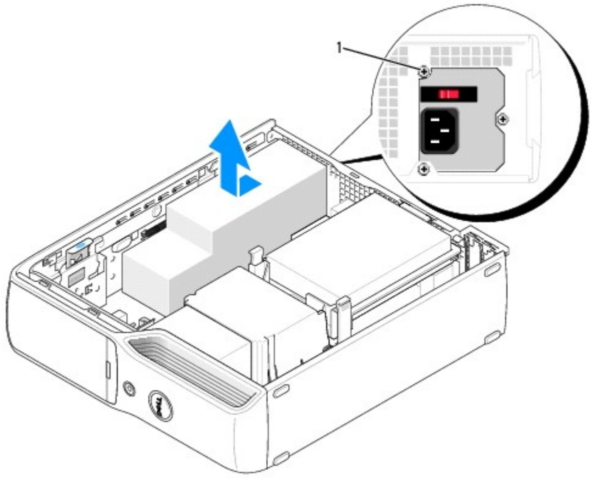
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

2. Disconnect the AC power cable from the power supply connector.

3. Disconnect all DC power cables from the system board and drives.

4. Remove the three power supply screws.



1	power supply screws (3)

5. Slide the power supply approximately 1 inch toward the front of the computer.

6. Carefully lift the power supply out of the computer.

Replacing the Power Supply

1. Lower the power supply into the computer and slide the power supply toward the back of the computer.

2. Replace the three power supply screws.

3. Reconnect all DC power cables.

4. Replace the computer cover (see Replacing the Computer Cover).

5. Connect the AC power cable to the power supply connector.

NOTICE: To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

6. Connect your computer and devices to electrical outlets, and then turn them on.

System Board

Removing the System Board

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide.*

NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

1. Follow the procedures in Before You Begin.

2. Remove any components that restrict access to the system board.

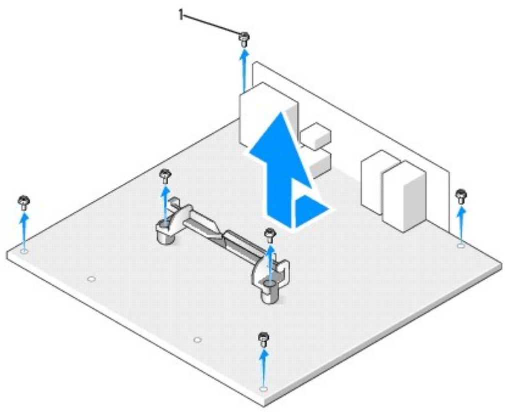
3. Remove the heat sink assembly and processor.

4. Disconnect all cables from the system board.

5. Before you remove the existing system board, visually compare the replacement system board to the existing board to ensure that you have the correct part.

6. Remove the six screws that secure the system board to the bottom of the computer.

7. Slide the system board assembly toward the front of the computer, and then carefully lift the system board up and out of the computer.



1	screws (6)

8. Place the system board assembly that you just removed next to the replacement system board to ensure that it is identical.

NOTE: Some components and connectors on the replacement system board may be in different locations from corresponding connectors on the existing system board.

Replacing the System Board

1. Gently align the system board into the chassis and slide it toward the back of the computer.

2. Replace the six screws to secure the system board to the computer.

NOTE: Some components and connectors on the replacement system board may be in different locations from corresponding connectors on the existing system board.

3. Transfer components from the existing system board to the replacement system board:

   a. Remove the memory modules and install them on the replacement system board (see Memory).

CAUTION: The heat sink assembly and processor package can get hot. To avoid burns, ensure that the assembly and package have had sufficient time to cool before you touch them.

   b. Remove the heat sink assembly (see Removing the Heat Sink Assembly) and processor package (see Removing the Processor) from the existing system board and transfer them to the replacement system board.

   c. Remove the modem from the existing system board and transfer it to the replacement system board (see Modem).

4. Replace any components and cables that you removed from the original system board.

5. Reconnect all cables to their connectors at the back of the computer.

6. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

7. Connect your computer and devices to electrical outlets, and then turn them on.

NOTE: If the new system board requires the BIOS to be updated, refer to Flashing the BIOS.

8. Set the jumpers on the replacement system board so that they are identical to the ones on the existing system board (see Jumper Settings).

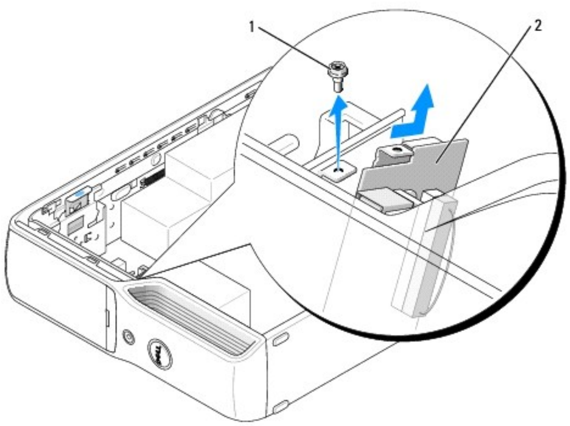
Front I/O Panel

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

⚠ **CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.**

Removing the Front I/O Panel

1. Follow the procedures in Before You Begin.
2. Remove the heat sink (see Removing the Heat Sink Assembly).
3. Remove the fan assembly (see Removing the Fan Assembly).
4. Remove any additional components that restrict access to the I/O panel.
5. Remove the screw that secures the front I/O panel to the computer.
6. Pivot the I/O panel toward the back of the computer, and then carefully lift it up and out of the computer.
7. Disconnect any cables that are attached to the front I/O panel.



1	screw	2	front I/O panel

8. Remove the Diagnostic LED card.
   a. Remove the cable connected to the card.
   b. Press the Diagnostic LED card case release lever and slide the case towards the bottom of the chassis to release the card case from the chassis.
   c. Gently remove the LED card case from the computer.

Installing the I/O Panel

⚠ **CAUTION: When reinstalling the fan, ensure that you do not pinch the wires that run between the system board and the fan.**

Follow the procedures in Removing the Front I/O Panel in reverse order.

To replace the Diagnostic LED card:

1. Orient the five LED card case tabs with the slots in the chassis.

NOTE: Ensure that the card release lever is on top.

2. Press the case so that the tabs fix firmly into the slots in the chassis.

3. Press the LED card case release lever and slide the case towards the top of the chassis until you hear a click and the case locks in position.

4. Replace the cable connected to the card.

Battery

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

A coin-cell battery maintains computer configuration, date, and time information. The battery can last several years. If you have to repeatedly reset time and date information after turning on the computer, replace the battery.

CAUTION: A new battery can explode if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer instructions.

Replacing the Battery

1. Enter the system setup program (see Entering System Setup) and record the values for all the screens so that you can restore the correct settings after installing the new battery.

2. Follow the procedures in Before You Begin.

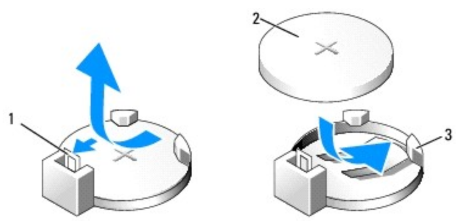
3. Remove the hard drive (see Removing a Hard Drive).

4. Locate the battery socket (see System Board Components).

NOTICE: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Ensure that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

5. Remove the battery by carefully prying it out of its socket with your fingers or with a blunt, nonconducting object, such as a plastic screwdriver.

6. Insert the new battery into the socket with the side labeled "+" facing up, and then snap the battery into place.



1	battery release lever	2	battery positive side	3	securing tabs (2)

7. Replace the hard drive (see Installing a Hard Drive).

8. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

9. Connect your computer and devices to electrical outlets, and then turn them on.

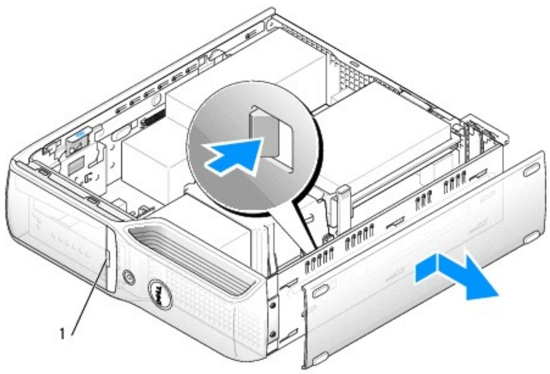
10. Enter system setup (see Entering System Setup) and restore the settings you recorded in step 1.

11. Properly dispose of the old battery.

    See the *Product Information Guide* for battery disposal information.

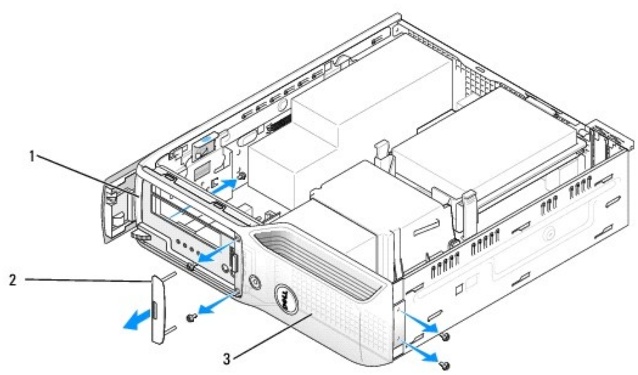
Front Panel

1. Follow the procedures in Before You Begin.
2. Remove the CD/DVD drive (see Removing a CD/DVD Drive).
3. Remove the optional Media Card Reader (see Removing a Media Card Reader).
4. Remove the optional floppy drive (see Removing a Floppy Drive).
5. Use a screwdriver to press in against the locking tab that secures the computer base until it releases the surrounding metal.
6. Slide the base towards the rear of the computer, then pull it towards you to remove it.



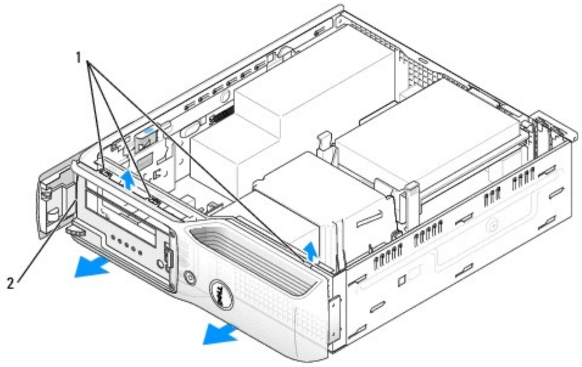
1	front panel door release button

7. Open the front panel door by pressing its release button.
8. Grasp the panel that surrounds the door release button where it meets the front panel and pull it towards you to remove it.
9. Unscrew the two screws located beneath the release button panel.
10. Unscrew the screw that secures the top of the front panel from the inside of the computer chassis.
11. Unscrew the two screws that attach the front panel to the base of the computer.



1	top	2	release button panel	3	front panel

12. Grasp the edge of the front panel lying against your work surface, then carefully pry it out and away from the chassis.



1	release tabs	2	top

13. Lift up on the front panel to release the top two tabs that attach it to the computer chassis.

14. Pull up on the lower tab to release it from the computer chassis and lift the front panel from the computer.

Back to Contents Page

Back to Contents Page

Specifications

Dell™ XPS™ 210 Service Manual

Processor	
Processor types	Intel® Pentium® 4, Pentium® D, Celeron® D, Intel Core™ processor
Level 2 (L2) cache	1 MB for Pentium 4 5XX processors (with Hyper Threading) 2 MB for Pentium 4 6XX processors (with Hyper Threading) 2 x 2 MB for Pentium D 9XX processors (with dual core) 2 x 1 MB for Pentium D 8XX processors (with dual core) 256K for Celeron D 3XX processors 2 MB for Intel Core E6400 processors and earlier 4 MB for Intel Core E6600 processors and later

Memory	
Type	533-, 667-, and 800-MHz DDR2
Memory connectors	four
Memory capacities	256 MB, 512 MB, 1 GB, or 2 GB
Maximum memory	4 GB **NOTE:** See Addressing Memory With 4-GB Configurations to verify the amount of memory available to the operating system.
BIOS address	F0000h

Computer Information	
Chipset	Intel G965 Express
DMA channels	eight
Interrupt levels	24
BIOS chip (NVRAM)	4 Mb
NIC	Integrated network interface capable of 10/100-Mbps communication
System clock	533-, 800- or 1066-MHz data rate (depending on your processor)

Video	
Type	integrated Intel Graphics Media Accelerator X3000 or PCI Express x16 graphics expansion slot

Audio	
Type	Internal 7.1 channel Intel High Definition Audio (Sigmatel STAC9227)

Expansion Bus	
Bus type	PCI Express x1 and x16
Bus speed	PCI Express:

	x1 slot bidirectional speed: 500 MB/sec x16 slot bidirectional speed: 8 GB/sec
PCI Express:	
connector	one x1
connector size	36 pins
connector data width (maximum)	one PCI Express lane
PCI Express:	
connector	one x16
connector size	164 pins
connector data width (maximum)	16 PCI Express lanes

Drives	
Externally accessible	one slimline 3.5-inch media bay one slimline 5.25-inch drive bay
Available devices	Serial ATA drive, USB memory devices, floppy drive, CD drive, DVD drive, DVD+RW drive, DVD/CD-RW combo drive, DVD+/-RW drive, and Media Card Reader
Internally accessible	one bay for 1-inch high hard drive

Connectors	
External connectors:	
IEEE 1394	one 6-pin powered back panel connector one 6-pin powered front panel connector
Video	15-hole D-SUB connector
USB	10-pin header for optional Media Card Reader (3.5 inch bay device) and two front panel and six back panel USB 2.0–compliant connectors **NOTE:** The 10-pin header connector used for the optional Media Card Reader is populated with only nine pins for keying purposes.
Audio	six back panel connectors for line-in, line-out/headphone, rear surround sound, microphone, side surround sound, and center/Low Frequency Effects (LFE) channel back panel S/PDIF connector front panel miniature headphone connector for line-out front panel microphone connector
Network adapter	RJ45 connector
Modem	RJ11 (MDC 1.5) connector and internally accessible 3-pin header that connects the modem to RJ11
Temperature Sensor	one 2-pin connector
System board connectors:	
Serial ATA	two 7-pin connectors
Fan	two 5-pin connectors (one for the CPU fan and one for the optional hard drive fan connector.)
PCI Express x1	36-pin connector
PCI Express x16	164-pin connector
USB	10-pin header for optional Media Card Reader (3.5-inch bay device)
MDC	one 12-pin connector
Floppy connector	one 26-pin connector
Front panel	one 40-pin header
Power	one 2 x 12 connector
Processor power	one 2 x 2 connector
IEEE 1394	one 2 x 5 header — always connected by cable to the front panel; supports front panel IEEE 1394 port

Controls and Lights	
Power control	push button
Power light	green light — Blinking green in sleep state; solid green for power-on state. amber light — Blinking amber indicates a problem with an installed device; solid amber indicates an internal power problem (see "Power Problems" in your computer *Owner's Manual)*.
Hard drive access light	green
Link integrity light (on integrated network adapter)	green light — A good connection exists between a 10-Mbps network and the computer. orange light — A good connection exists between a 100-Mbps network and the computer. off (no light) — The computer is not detecting a physical connection to the network.
Activity light (on integrated network adapter)	yellow blinking light
Diagnostic lights	four lights on the front panel (see Diagnostic Lights for an explanation of the diagnostic light codes)
Standby power light	STBYLED on the system board
Activity light (optional Media Card Reader)	green blinking light

Power	
DC power supply:	
Wattage	275 W
Heat dissipation	935 BTU/hr
Voltage (see the safety instructions in the *Product Information Guide* for important voltage setting information)	manual selection power supplies — 90 to 135 V at 50/60 Hz; 180 to 265 V at 50/60 Hz
Backup battery	3-V CR2032 lithium coin cell

Physical	
Height	31.8 cm (12.5 inches)
Width	9.4 cm (3.7 inches)
Depth	36.8 cm (14.5 inches)
Weight	6.89 kg (15.2 lb)

Environmental	
Temperature:	
Operating	10° to 35°C (50° to 95°F)
Storage	–40° to 65°C (–40° to 149°F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz at 0.5 octave/min
Storage	0.5 G at 3 to 200 Hz at 1 octave/min
Maximum shock:	
Operating	bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 in/sec)
Storage	27-G faired square wave with a velocity change of 508 cm/sec (200 in/sec)
Altitude:	
Operating	–15.2 to 3048 m (–50 to 10,000 ft)
Storage	–15.2 to 10,668 m (–50 to 35,000 ft)

Back to Contents Page

[Back to Contents Page]

System Setup

Dell™ XPS™ 210 Service Manual

Overview

Use system setup as follows:

- To change the system configuration information after you add, change, or remove any hardware in your computer
- To set or change a user-selectable option such as the user password
- To read the current amount of memory or set the type of hard drive installed

Before you use system setup, it is recommended that you write down the system setup screen information for future reference.

NOTICE: Unless you are an expert computer user, do not change the settings for this program. Certain changes can make your computer work incorrectly.

Entering System Setup

1. Turn on (or restart) your computer.
2. When the blue DELL™ logo appears, press <F2> immediately.

NOTE: Keyboard failure may result when a key on the keyboard is held down for extended periods of time. To avoid possible keyboard failure, press and release <F2> in even intervals until the system setup screen appears.

If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop, then shut down your computer and try again.

System Setup Screens

The system setup screen displays current or changeable configuration information for your computer. Information on the screen is divided into three areas: the options list, active options field, and key functions.

<table>
<tr>
<td rowspan="2">Options List — This field appears on the left side of the system setup window. The field is a scrollable list containing features that define the configuration of your computer, including installed hardware, power conservation, and security features.

Scroll up and down the list with the up- and down-arrow keys. As an option is highlighted, the Option Field displays more information about that option and the option's current and available settings.

Press <Enter> to expand or contract each of the main option fields.</td>
<td>Option Field — This field contains information about each option. In this field you can view your current settings and make changes to your settings.

Use the right- and left-arrow keys to highlight an option. Press <Enter> to make that selection active.</td>
</tr>
<tr>
<td>Key Functions — This field appears below the Option Field and lists keys and their functions within the active system setup field.</td>
</tr>
</table>

System Setup Options

NOTE: Depending on your computer, BIOS version, and installed devices, the items listed in this section may not appear, or may not appear exactly as listed.

System	
System Info	Lists system information such as the computer name, the BIOS version number and date, system tags, and other system-specific information. **NOTE:** The system name listed in the BIOS may not appear exactly as the name that appears on the computer or in the computer's documentation.
CPU Info	Identifies whether the computer's processor supports Hyper-Threading and lists the processor bus speed, processor ID, clock speed, and L2 cache.
Memory Info	Indicates the amount of installed memory, memory speed, channel mode (dual or single), and type of memory.
Date/Time	Displays current date and time settings.
Boot Sequence	The computer attempts to boot from the sequence of devices specified in this list. **NOTE:** If you insert a boot device and restart the computer, the device appears in the system setup menu. To boot from a USB memory device, select the USB device and move it so that it becomes the first device in the list.

Drives	
Diskette Drive (**Internal** default)	Enables or disables floppy drives, and sets the read permission for the internal floppy drive. • **Off** — Disables all floppy drives. • **USB** — Enables the USB floppy drive. • **Internal** — Enables the internal floppy drive. • **Read Only** — Enables the internal drive controller and allows the internal floppy drive read-only permission. **NOTE:** Operating systems with USB support will recognize USB floppy drives regardless of this setting.
Drive 0 (**On** default)	Enables or disables a SATA device (such as a hard drive). **On** (the default setting) enables the interface so that the device can be used. Displays the controller type (SATA), the port number the drive is using, the drive ID number, capacity and link speed, and whether the drive is controlled by the BIOS.
Drive 1 (**On** default)	Enables or disables an ATA device (such as a CD or DVD drive). **On** (the default setting) enables the interface so that the device can be used. Displays the controller type (ATA), the port number the drive is using, the drive ID number, capacity and link speed, and whether the drive is controlled by the BIOS.
SATA Operation (**ATA** default)	Defines the SATA modes. You can set the SATA controller to **AHCI** or **ATA** mode.

Onboard Devices	
Integrated NIC (**On** default)	Enables or disables the integrated NIC controller. Settings are **On**, **Off**, or **On w/PXE**. When the **On w/PXE** setting is active (available only for setting up a future boot process), the computer prompts you to press <Ctrl><Alt><b>. Pressing this key combination causes a menu to display that allows you to select a method for booting from a network server. If a boot routine is not available from the network server, the computer attempts to boot from the next device in the boot sequence list.
Integrated Audio (**On** default)	Enables or disables the onboard audio controller.
Card Reader	Enables or disables the optional Media Card Reader.
1394 Controller (**On** default)	Enables or disables IEEE 1394 connections.
USB for FlexBay (**On** default)	Enables or disables internal USB for FlexBay. **NOTE:** This USB option appears only if a FlexBay device is installed. Set to **On** (default) so that USB devices will be detected and supported in the operating system. The **No Boot** option enables a USB controller, but it does not recognize a USB storage device.

Video	
Primary Video (**Auto** default)	Specifies which video controller is primary when two video controllers are present on the computer. **Auto** enables the add-in video controller. **Onboard** enables the integrated video controller.
Video Memory Size (**8 MB** default)	Configures the system memory allocation reserved for the integrated video controller. Settings are **1MB** and **8MB**.

Performance	
Hyper-Threading (**On** default)	Determines whether the physical processor appears as one or two logical processors. The performance of some applications improves with additional logical processors installed. If your computer's processor supports Hyper-Threading, this option appears in the **Options List**.
Multiple CPU Core	This setting specifies whether more than one CPU core is enabled. The performance of some applications may improve with an additional core enabled. Defaults to **On** (second core enabled).
SpeedStep (**On** default)	Allows the BIOS to modify the processor fan and speed based on processor temperature readings. **NOTE:** Intel SpeedStep® is not supported by all processors; therefore, this option will appear only when a supported processor is installed.
HDD Acoustic Mode (**Bypass** default)	- **Bypass** — Your computer does not test or change the current acoustics mode setting. - **Quiet** (default) — The hard drive operates at its most quiet setting. - **Suggested** — The hard drive operates at the level suggested by the drive manufacturer. - **Performance** — The hard drive operates at its maximum speed. **NOTE:** Switching to performance mode may increase the amount of noise generated by the hard drive, and the drive may not see an increase in data transfer rates. **NOTE:** Changing the acoustics setting does not alter your hard drive image.

Security	
Admin Password (**Not Set** default)	Displays the current status of your System Setup program's password security feature and allows you to verify and assign a new admin password.
System Password (**Not Set** default)	Displays the current status of the system's password security feature and allows a new system password to be assigned and verified.
Password Changes (**Unlocked** default)	Determines the interaction between the **System** password and the **Admin** password. - **Locked —** Prevents a user without a valid **Admin** password from being able to modify the **System** password. - **Unlocked** — Allows a user without a valid **Admin** password to modify the **System** password.
Execute Disable (**On** default)	Enables or disables **Execute Disable** memory protection technology.

Power Management	
AC Recovery (**Off** default)	Determines how the system responds when AC power is re-applied after a power loss. - **Off** — The system remains off when power is re-applied. You must press the front panel power button before the system turns on. - **On** — The system turns on when power is re-applied. - **Last** — The system returns to the last power state the system was in just before it was turned off.
Auto Power On (**Off** default)	Sets the computer to automatically turn on. - **Off** — Disables the Auto Power On feature. - **Everyday** — Turns the computer on every day at the time set in **Auto Power Time.** - **Weekdays** — Turns the computer on every day from Monday through Friday at the time set in **Auto Power Time.** **NOTE:** This feature does not work if you turn off your computer using a power strip or surge protector.
Auto Power Time	Sets time to automatically turn on the computer. Time is kept in a 24-hour format (*hours:minutes*). Change the start-up time by pressing the right- or left-arrow key to increase or decrease the numbers, or type numbers in both the date and time fields. This feature does not work if you turn off your computer using a power strip or surge protector.
Suspend Mode (**S3** default)	The options are **S1**, a suspend state where the computer is running in a low-power mode, and **S3**, a standby state where the power is reduced or turned off for most components, but system memory remains active.

Quick Resume	Enables or disables the Intel® Quick Resume Technology mode for providing rapid response to power button presses.

Maintenance	
SERR DMI Message (**On** default)	Controls the SERR DMI message mechanism. **NOTE:** Some graphics cards require that the SERR DMI message mechanism be disabled.
Load Defaults	Restores System Setup options to their factory defaults.
Event Log	Allows you to view the **Event Log**. Entries are marked **R** for **Read** and **U** for **Unread**. **Mark All Entries Read** puts an R to the left of all entries. **Clear Log** clears the **Event Log**.

POST Behavior	
Fastboot (**On** default)	When enabled, this feature reduces computer startup time by bypassing some compatibility steps. • **Off** — Does not skip any steps during computer startup. • **On** — Starts the system more quickly.
Numlock Key (**On** default)	Determines the functionality of the numeric keys on the right side of your keyboard. • **Off** — Commands the right keypad keys to function as arrows. • **On** — Commands the right keypad keys to function as numbers.
POST Hotkeys (**Setup & Boot Menu** default)	Determines whether the startup screen displays a message stating the keystroke sequence that is required to enter the System Setup program or the Quickboot feature. • **Setup & Boot Menu** — Displays both messages (F2=Setup and F12=Boot Menu). • **Setup** — Displays the setup message only (F2=Setup). • **Boot Menu** — Displays the **Quickboot** message only (F12=Boot Menu). • **None** — Displays no message.
Keyboard Errors (**Report** default)	When set to **Report** and an error is detected during POST, the BIOS will display the error message and prompt you to press <F1> to continue or press <F2> to enter System Setup. When set to **Do Not Report** (disabled) and an error is detected during POST, the BIOS will display the error message and continue booting the system.

Boot Sequence

This feature allows you to change the boot sequence for devices.

NOTICE: If you modify any boot sequence settings, save the new settings to avoid losing the changes.

Option Settings

NOTE: The computer attempts to boot from all bootable devices listed in the boot sequence. If no bootable device is detected the computer displays the error message No bootable devices. Press the <F1> key to retry the boot or press the <F2> key to enter the setup utility.

- **Onboard or USB Floppy Drive —** The computer attempts to boot from the floppy drive. If there is no floppy disk in the drive, or there is no floppy drive installed, the computer attempts to boot from the next bootable device in the sequence.

  NOTE: If there is a non-bootable floppy disk in the drive, the computer generates an error message. Follow the on-screen instructions to retry the boot.

- **Onboard SATA Hard Drive** — The computer attempts to boot from the primary hard drive. If there is no operating system on the drive, the computer attempts to boot from the next bootable device in the sequence.
- **Onboard or USB CD-ROM Drive** — The computer attempts to boot from the CD-ROM drive. If there is no CD in the drive, or if the CD in the drive is non-bootable, the computer attempts to boot from the next bootable device in the sequence.
- **Onboard Network Controller —** The computer attempts to boot from the network. If no network is detected, the computer attempts to boot from the next bootable device in the sequence

NOTE: To boot from a network the onboard network controller must be set to **On w/PXE**.

- **USB Device —** Insert the memory device into a USB port and restart the computer. When F12 = Boot Menu appears in the upper-right corner of the screen, press the <F12> key. The BIOS detects the device and adds the USB flash option to the boot menu.

NOTE: To boot from a USB device, the device must be bootable. To verify that your device is bootable, check the device documentation.

Changing the Boot Sequence for the Current Boot

You can use this feature, for example, to restart your computer to a USB device such as a floppy drive, memory key, or CD-RW drive.

NOTE: If you are booting to a USB floppy drive, you must first set the floppy drive to OFF in system setup (see System Setup Options).

1. If you are booting to a USB device, connect the USB device to a USB connector (see About Your Computer).

2. Turn on (or restart) your computer.

3. When the DELL logo appears, press <F12> immediately.

   NOTE: Keyboard failure may result when a key on the keyboard is held down for extended periods of time. To avoid possible keyboard failure, press and release <F12> in even intervals until the **Boot Device Menu** appears.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.

4. At the **Boot Device Menu**, use the up- and down-arrow keys or press the appropriate number on the keyboard to highlight the device that is to be used for the current boot only, and then press <Enter>.

   For example, if you are booting to a USB memory key, highlight **USB Flash Device** and press <Enter>.

NOTE: To boot to a USB device, the device must be bootable. To make sure your device is bootable, check the device documentation.

Changing the Boot Sequence for Future Boots

1. Enter system setup (see Entering System Setup).

2. Press the arrow keys to highlight the **Boot Sequence** menu option and press <Enter> to access the menu.

   NOTE: Write down your current boot sequence in case you want to restore it.

3. Press the up- and down-arrow keys to move through the list of devices.

4. Press the spacebar to enable or disable a device (enabled devices have a check mark).

5. Press the <u> key or the <d> key to move a selected device up or down the list.

Clearing Forgotten Passwords

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTICE: This process erases both the system and administrator passwords.

1. Follow the procedures in Before You Begin.

2. Locate the 2-pin password jumper (CLRPSWD) on the system board, and remove the jumper to clear the password (see System Board Components).

3. Replace the computer cover (see Replacing the Computer Cover).

4. Connect your computer and monitor to electrical outlets, and then turn them on.

5. After the Microsoft® Windows® desktop appears on your computer, shut down the computer (see Turning Off Your Computer).

6. Turn off the monitor and disconnect it from the electrical outlet.

7. Disconnect the computer power cable from the electrical outlet, and press the power button to ground the system board.

8. Remove the computer cover (see Removing the Computer Cover).

9. Locate the 2-pin password jumper (CLRPSWD) on the system board (see System Board Components) and attach the jumper to re-enable the password feature.

10. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

11. Connect your computer and devices to electrical outlets, and then turn them on.

NOTE: In system setup (see System Setup), both system and administrator password options appear as **Not Set**. The password feature is enabled but a password is not assigned.

12. Assign a new system and/or administrator password, as needed.

Clearing CMOS Settings

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

NOTE: This procedure does not clear or reset system and setup passwords.

1. Follow the procedures in Before You Begin.

2. Locate the 2-pin password (CLRPSWD) and CMOS (CLRCMOS) jumpers on the system board (see System Board Components).

3. Remove the password jumper plug, then place the plug on the CLRCMOS jumper pins and wait approximately 5 seconds.

NOTICE: The password jumper plug must be reinstalled on the password jumper pins in order to enable the password feature.

4. Remove the jumper plug from the CLRCMOS jumper pins and place it back on the password jumper pins.

5. Replace the computer cover (see Replacing the Computer Cover).

NOTICE: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

6. Connect your computer and devices to electrical outlets, and then turn them on.

Flashing the BIOS

The BIOS may require flashing when an update is available or when replacing the system board.

1. Turn on the computer.

2. Locate the BIOS update file for your computer at **support.dell.com**.

3. Click **Download Now** to download the file.

4. If the **Export Compliance Disclaimer window** appears, click **Yes, I Accept this Agreement**.

   The **File Download window** appears.

5. Click **Save this program to disk**, and then click **OK**.

   The **Save In window** appears.

6. Click the down arrow to view the **Save In** menu, select **Desktop**, and then click **Save**.

   The file downloads to your desktop.

7. Click **Close** when the **Download Complete** window appears.

   The file icon appears on your desktop and is titled the same as the download BIOS update file.

8. Double-click the file icon on the desktop and follow the on-screen instructions.

Back to Contents Page

[Back to Contents Page](#)

Technical Overview

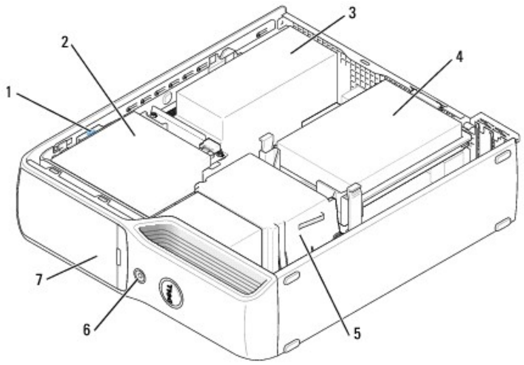
Dell™ XPS™ 210 Service Manual

- [Inside View of Your Computer](#)
- [System Board Components](#)
- [Power Supply DC Connector Pin Assignments](#)

Inside View of Your Computer

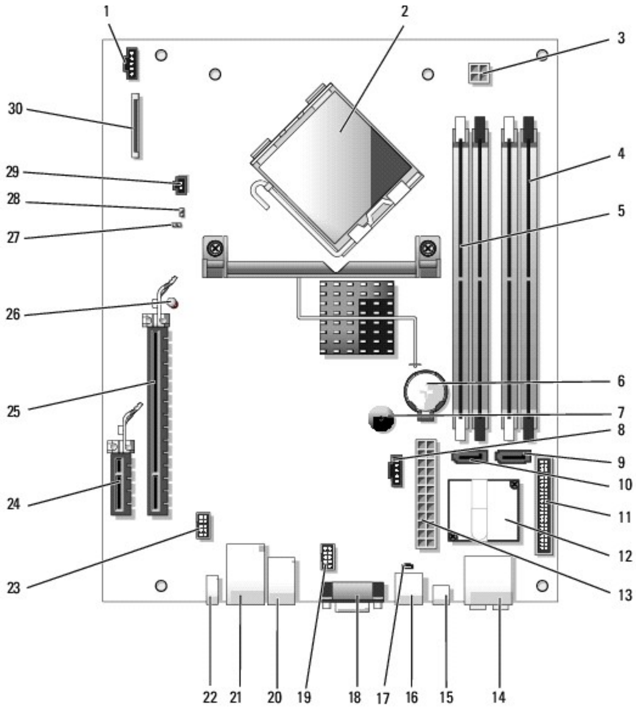
CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.



1	drive release latch	2	CD/DVD drive	3	power supply and fan
4	hard drive	5	heat sink assembly	6	power button
7	front panel door				

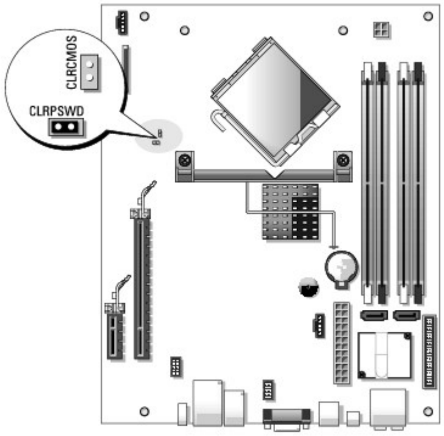
System Board Components



1	processor fan connector (CPUFAN)	16	modem connector (RJ11)
2	processor connector (CPU)	17	RJ11 internal connector (RJ11INT)
3	processor power connector (POWER12V)	18	video connector (VGA)
4	memory module connectors (2, 4)	19	Media Card Reader connector (USBINT)
5	memory module connectors (1, 3)	20	USB connectors (4) (USB_BACK)
6	battery socket (BATTERY)	21	network connector (NIC) and USB connectors (2) (NIC_USB1)
7	internal speaker (SPKR)	22	back panel IEEE 1394 connector (BACK1394)
8	hard drive fan connector (HDDFAN)	23	IEEE 1394 connector (INT1394)
9	hard drive connector (SATA0)	24	PCI Express x1 connector (SLOT2)
10	CD/DVD connector (SATA1)	25	PCI Express x16 connector (SLOT1)
11	front panel connector (FRONT PANEL)	26	standby LED (STBYLED)
12	modem	27	password jumper (CLRPSWD)
13	power connector (POWER)	28	RTC reset jumper (CLRCMOS)
14	line-in, line-out, microphone, and center/LFE connectors (AUDIOBACK1)	29	temperature connector (THRM)
15	S/PDIF audio connector (SPDIF)	30	floppy drive connector (FLOPPY)

Jumper Settings

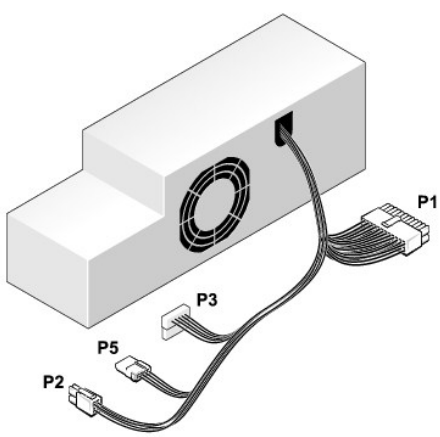
Jumper locations are shown below.



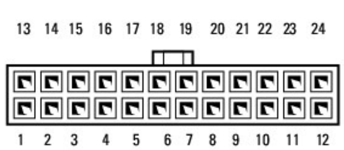
Jumper	Setting	Description
CLRPSWD		Password features are enabled (default setting).
		Password features are disabled.
CLRCMOS		The real-time clock has not been reset.
		The real-time clock is being reset (jumpered temporarily).
jumpered		*unjumpered*

-

Power Supply DC Connector Pin Assignments



DC Power Connector P1



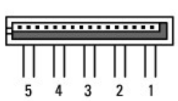
Pin Number	Signal Name	18-AWG Wire
1	+3.3 VDC	Orange
2	+3.3 VDC	Orange
3	COM	Black
4	+5 VDC	Red
5	COM	Black
6	+5 VDC	Red
7	COM	Black
8	POK*	Gray
9	+5 VFP	Purple
10	+12 VDC	Yellow
11	+12 VDC*	Yellow
12	+3.3 VDC	Orange
13	+3.3 VDC/SE	Orange
14	-12 VDC	Blue
15	COM	Black
16	PS_ON*	Green
17	COM	Black
18	COM	Black
19	COM	Black
20	N.C.	N.C.
21	+5 VDC	Red
22	+5 VDC	Red
23	+5 VDC	Red
24	COM	Black
*Uses 22 AWG wire instead of 18 AWG.		

DC Power Connector P2



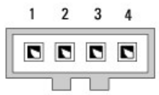
Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	COM	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connector P3



Pin Number	Signal Name	18-AWG Wire
1	+3.3 VDC	Orange
2	COM	Black
3	+5 VDC	Red
4	COM	Black
5	+12 VDC	Yellow

DC Power Connector P5



Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	+5 VDC	Red
3	KEY	N/A
4	+3.3 VDC	Orange

Back to Contents Page

Back to Contents Page

Troubleshooting

Dell™ XPS™ 210 Service Manual

Dell Diagnostics

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

When to Use the Dell Diagnostics

If you experience a problem with your computer, perform the checks in this section and run the Dell Diagnostics before you contact Dell for technical assistance.

NOTE: The Dell Diagnostics only operate on Dell computers.

Starting the Dell Diagnostics

1. Turn on (or restart) your computer.

2. When the DELL logo appears, press <F12> immediately.

   NOTE: Keyboard failure may result when a key is held down for extended periods of time. To avoid possible keyboard failure, press and release <F12> in even intervals to open the **Boot Device Menu**.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop, then shut down your computer and try again.

3. At the **Boot Device Menu**, use the up- and down-arrow keys or press the appropriate number on the keyboard to highlight **Boot to Utility Partition**, and then press <Enter>.

   NOTE: The Quickboot feature changes the boot sequence for the current boot only. Upon restart, the computer boots according to the boot sequence specified in system setup.

4. At the Dell Diagnostics **Main Menu**, left-click with the mouse, or press <Tab> and then <Enter>, to select the test you want to run (see Dell Diagnostics Main Menu).

   NOTE: Write down any error codes and problem descriptions exactly as they appear and follow the instructions on the screen.

5. After all tests have completed, close the test window to return to the Dell Diagnostics **Main Menu**.

6. Close the **Main Menu** window to exit the Dell Diagnostics and restart the computer.

Dell Diagnostics Main Menu

The following tests can be run from the Dell Diagnostics **Main Menu**:

Option	Function
Express Test	Performs a quick test of system devices. The test typically takes 10 to 20 minutes and requires no interaction on your part. Run **Express Test** first to increase the possibility of tracing the problem quickly.
Extended Test	Performs a thorough check of system devices. The test typically takes an hour or more and peridocially requires your input to answer specific questions.
Custom Test	Tests a specific device in the system and can be used to customize the tests you want to run.
Symptom Tree	Lists a number of common symptoms and allows you to select a test based on the symptom of the problem you are having.

For any problem encountered during a test, a message appears with an error code and a description of the problem. Write down the error code and problem description exactly as it appears and follow the instructions on the screen. If you cannot resolve the problem, see "Contacting Dell" in your *Owner's Manual* for instructions on obtaining technical assistance.

NOTE: The Service Tag for your computer is located at the top of each test screen. When contacting Dell support, have your Service Tag ready.

The following tabs provide additional information for tests run from the **Custom Test** or **Symptom Tree** option:

Tab	Function
Results	Displays the results of the test and any error conditions encountered.
Errors	Displays error conditions encountered, error codes, and the problem description.
Help	Describes the test and any requirements for running the test.
Configuration (Custom Test only)	Displays the hardware configuration for the selected device. The Dell Diagnostics obtains configuration information for all devices from system setup, memory, and various internal tests, and it displays the information in the device list in the left pane of the screen. **NOTE:** The device list may not display the names of all the components installed on your computer or all devices attached to your computer.
Parameters (Custom Test only)	Allows you to customize the test, if applicable, by changing the test settings.

System Lights

Your power button light and hard drive activity light may indicate a computer problem.

Power Light	Problem Description	Suggested Resolution
Solid green	Power is on and the computer is operating normally.	No corrective action is required.
Blinking green	The computer is in a sleep state (Microsoft® Windows® 2000 and Windows XP).	Press the power button, move the mouse, or press a key on the keyboard to wake the computer and resume normal operation.
Blinks green several times, and then turns off	A configuration error exists.	Check the diagnostic lights to see if the specific problem is identified.
Solid amber	The power supply is working properly, but the system board is not completing power up.	Check the diagnostic lights and determine if the specific problem is identified. If the computer does not boot, contact Dell for technical assistance (see "Contacting Dell" in your computer *Owner's Manual*).
Blinking amber	The power supply is operating outside of its normal range.	Check the diagnostic lights and determine if the specific problem is identified. See "Power Problems" in your computer *Owner's Manual*.
Solid green and a beep code during POST	A problem was detected while the BIOS was executing.	See Beep Codes for instructions on diagnosing the beep code. Check the diagnostic lights and determine if the specific problem is identified.
Solid green power light, no beep code, and no video during POST	The monitor or the graphics card may be faulty or incorrectly installed.	Check the diagnostic lights and determine if the specific problem is identified. See "Video and Power Problems" in your computer *Owner's Manual*.
Solid green power light and no beep code, but the computer locks up during POST	An integrated system board device may be faulty.	Check the diagnostic lights and determine if the specific problem is identified. If the problem is not identified, contact Dell for technical assistance (see "Contacting Dell" in your computer *Owner's Manual*).

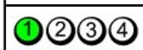
Hard Drive Activity Light	Problem Description	Suggested Resolution
Solid green	The hard drive activity light is on when the computer reads data from, or writes data to the hard drive. The light might also be on when a device such as a CD player is operating.	No corrective action is required.

Diagnostic Lights

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

To help you troubleshoot a problem, your computer has four lights labeled 1, 2, 3, and 4 on the front panel (see Front View). When the computer starts normally, the lights flash before turning off. If the computer malfunctions, the sequence of the lights identify the problem.

NOTE: After the computer completes POST, all four lights turn off before booting to the operating system.

Light Pattern	Problem Description	Suggested Resolution
	The computer is in a normal *off* condition or a possible pre-BIOS failure has occurred.	• Plug the computer into a working electrical outlet (see "Power Problems" in your *Owner's Manual*). • If the problem persists, contact Dell (see "Contacting Dell" in your *Owner's Manual*).
	A possible processor failure has occurred.	Contact Dell (see "Contacting Dell" in your *Owner's Manual*).
	Memory modules are detected, but a memory failure has occurred.	• If two or more memory modules are installed, remove the modules (see Removing Memory), then reinstall one module (see Installing Memory) and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. • If available, install properly working memory of the same type into your computer (see Installing Memory). • If the problem persists, contact Dell (see "Contacting Dell" in your *Owner's Manual*).
	A possible graphics card failure has occurred.	• Reseat any installed graphics cards (see Cards). • If available, install a working graphics card into your computer. • If the problem persists or the computer has integrated graphics, contact Dell (see "Contacting Dell" in your *Owner's Manual*).
	A possible floppy drive or hard drive failure has occurred.	Reseat all power and data cables.
	A possible USB failure has occurred.	Reinstall all USB devices and check all cable connections.
	No memory modules are detected.	• If two or more memory modules are installed, remove the modules (see Removing Memory), then reinstall one module (see Installing Memory) and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. • If available, install properly working memory of the same type into your computer (see Installing Memory). • If the problem persists, contact Dell (see "Contacting Dell" in your *Owner's Manual*).
	Memory modules are detected, but a memory configuration or compatibility error has occurred.	• Ensure that no special requirements for memory module/connector placement exist (see Memory). • Ensure that the memory you are using is supported by your computer (see Memory). • If the problem persists, contact Dell (see "Contacting Dell" in your *Owner's Manual*).
	A possible expansion card failure has occurred.	1. Determine if a conflict exists by removing an expansion card (not a graphics card) and restarting the computer (see Cards). 2. If the problem persists, reinstall the card that you removed, then remove a different card and restart the computer. 3. Repeat this process for each expansion card installed. If the computer starts normally, troubleshoot the last card removed from the computer for resource conflicts (see "Resolving Software and Hardware Incompatibilities" in your *Owner's Manual*). 4. If the problem persists, contact Dell (see "Contacting Dell" in your *Owner's Manual*).
	Another failure has occurred.	• Ensure that all hard drive and CD/DVD drive cables are properly connected to the system board (see System Board Components). • If there is an error message on your screen identifying a problem with a device (such as the floppy drive or hard drive), check the device to make sure it is functioning properly. • If the operating system is attempting to boot from a device (such as the floppy drive or hard drive), check system setup (see System Setup) to make sure the boot sequence is correct for the devices installed on your computer. • If the problem persists, contact Dell (see "Contacting Dell" in your *Owner's Manual*).

Beep Codes

Your computer may emit a series of beeps during start-up if the monitor cannot display errors or problems. This series of beeps, called a beep code, identifies a problem. For example, beep code 1-3-1 (one possible beep code) consists of one beep, a burst of three beeps, and then one beep. This beep code tells you that the computer encountered a memory problem.

Code	Cause
1-1-2	Microprocessor register failure
1-1-3	NVRAM read/write failure
1-1-4	ROM BIOS checksum failure

1-2-1	Programmable interval timer failure
1-2-2	DMA initialization failure
1-2-3	DMA page register read/write failure
1-3	Video Memory Test failure
1-3-1 through 2-4-4	Memory not being properly identified or used
3-1-1	Slave DMA register failure
3-1-2	Master DMA register failure
3-1-3	Master interrupt mask register failure
3-1-4	Slave interrupt mask register failure
3-2-2	Interrupt vector loading failure
3-2-4	Keyboard Controller Test failure
3-3-1	NVRAM power loss
3-3-2	Invalid NVRAM configuration
3-3-4	Video Memory Test failure
3-4-1	Screen initialization failure
3-4-2	Screen retrace failure
3-4-3	Search for video ROM failure
4-2-1	No timer tick
4-2-2	Shutdown failure
4-2-3	Gate A20 failure
4-2-4	Unexpected interrupt in protected mode
4-3-1	Memory failure above address 0FFFFh
4-3-3	Timer-chip counter 2 failure
4-3-4	Time-of-day clock stopped
4-4-1	Serial or parallel port test failure
4-4-2	Failure to decompress code to shadowed memory
4-4-3	Math coprocessor test failure
4-4-4	Cache test failure

Back to Contents Page